

Appendix F: Managing Nonnative Invasive Species

**A CALFED Bay-Delta Program Implementation Plan for
Managing Nonnative Invasive Species in the San
Francisco Bay-Delta Estuary/Sacramento-San Joaquin
Rivers and Associated Watersheds**

JULY 2000

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APPENDIX F: MANAGING NONNATIVE INVASIVE SPECIES: A CALFED BAY-DELTA PROGRAM IMPLEMENTATION PLAN FOR THE SAN FRANCISCO BAY-DELTA ESTUARY/SACRAMENTO-SAN JOAQUIN RIVERS AND ASSOCIATED WATERSHEDS

SUMMARY

The purpose of this Nonnative Invasive Species (NIS) Implementation Plan is to provide guidance for the specific management actions necessary to address the prevention, control and impacts of nonnative invasive species that have invaded or may invade the ecosystems of the San Francisco Bay-Delta, the Sacramento/San Joaquin Rivers and their watersheds.

The content of this plan focuses on a detailed outline of the Tasks and Actions to be accomplished in an effort to achieve the goals and address the major issues identified in the **STRATEGIC PLAN FOR MANAGING NONNATIVE INVASIVE SPECIES**, dated July, 2000.

The three goals on which the Strategic Plan and this Implementation Plan are based are as follows:

- Goal I: Preventing new introductions and establishment of NIS into the ecosystems of the San Francisco Bay-Delta, the Sacramento/San Joaquin Rivers and their watersheds.
- Goal II: Limiting the spread or, when possible and appropriate, eliminating populations of NIS through management.
- Goal III: Reducing the harmful ecological, economical, social and public health impacts resulting from infestation of NIS through appropriate mitigation.

Program implementation will be guided by the Implementation Plan. The plan focuses on the early

period of implementation when needed actions are better known, but also provides a long-term vision for continuing implementation for future years. Adaptive management will adjust future implementation to accommodate what we learn about the system and the response to the early efforts of the NIS Program. It is important to note that, as the efforts to rehabilitate the estuary progress, they should include the establishment and stewardship of native populations.

Contributing to this document were the CALFED agencies and participants from academia, non-profits, stakeholder groups and individuals with technical experience with NIS. The information contained in the Strategic Plan for the Ecosystem Restoration Program (September 30, 1998) and the draft Ecosystem Restoration Program Plan, Volume I (October 1, 1998), both CALFED Bay-Delta Program documents, provided further information for this plan. Public comments also will be solicited from local governments and regional entities, and public and private organizations that have expertise in the control of NIS. Comments will be considered and revisions made to the plan, as appropriate.

WHILE THIS PLAN PROVIDES GUIDANCE, IT DOES NOT STAND ALONE AS AN INSTRUMENT TO DEAL WITH THE PROBLEM. WITH THIS COORDINATED EFFORT, CALIFORNIA WILL HAVE A MORE EFFICIENT APPROACH FOR IMPLEMENTING CALIFORNIA NIS STRATEGIES. BESIDES THE CALFED BAY-DELTA PROGRAM, CALIFORNIA ENTITIES SHOULD FIND THE DOCUMENT ESSENTIAL FOR DESIGNING PROJECTS, PREPARING PROPOSALS, AND PRIORITIZING ACTIVITIES RELATED TO THE NIS ISSUE.

INTRODUCTION

The purpose of this implementation plan is to provide a standard approach for formulating management actions to address prevention, eradication, control and impacts of NIS that have invaded or may invade the ecosystems of the San Francisco Bay-Delta estuary, the Sacramento/San Joaquin Rivers and their watersheds. This plan will serve as a basic model for resource managers responsible for implementing programs to protect and restore natural and modified ecosystems in California.

The primary focus of this plan will be directed at the San Francisco Bay-Delta estuary/Sacramento-San Joaquin Rivers and associated watersheds in California, though actions may be identified that need to be taken on a statewide basis.

In May 1995, the CALFED Bay-Delta Program was established to restore the ecological health and improve water management for beneficial uses in the Bay-Delta system. The mission of CALFED is: to develop a long-term, comprehensive plan that will restore ecosystem health and improve water management for beneficial uses of the Bay-Delta system. CALFED addresses problems in four resource areas: ecosystem quality, water quality, levee system integrity and water supply reliability. The Nonnative Invasive Species Program has been developed under the Ecosystem Quality, Ecosystem Restoration Program, though we recognize that NIS negatively impact all of the CALFED resources areas.

Goal for Ecosystem Quality: The goal for ecosystem quality is to improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta system to support sustainable populations of diverse and valuable plant and animal species. To accomplish this, a draft Ecosystem Restoration Program Plan has been developed with goals to increase aquatic and terrestrial habitats, improve ecosystem functions and reduce the effects of stressors which included non-native invasive species. Management actions of this Implementation Plan will be consistent with the objectives identified in the **STRATEGIC PLAN FOR ECOSYSTEM RESTORATION PROGRAM (ERP)** dated September 30, 1998. Goal 5 of that plan is "Prevent establishment of additional nonnative invasive species and reduce the negative biological and economic impacts of established

nonnative species." The objectives identified under this goal are:

- Objective 1: Eliminate further introductions of new species in ballast water of ships.
- Objective 2: Eliminate the use of imported marine baits.
- Objective 3: Halt the introduction of freshwater bait organisms into the waters of Central California.
- Objective 4: Halt the deliberate introduction and spread of potentially harmful species of fish and other aquatic organisms in the Bay-Delta and the Central Valley.
- Objective 5: Halt the release of fish and other organisms from aquaculture operations into Central California waters, especially those imported from other regions.
- Objective 6: Halt the introduction of invasive aquatic and terrestrial plants into Central California.
- Objective 7: Halt the release and spread of aquatic organisms from the aquarium and pet trades into the waters of Central California.
- Objective 8: Reduce the impacts of exotic mammals on native birds and mammals.
- Objective 9: Develop focused control efforts on those introduced species for which control is most feasible and of greatest benefit.
- Objective 10: Prevent the invasion of the zebra mussel into California.

THE MISSION

The mission of the CALFED non-native invasive species program:

PREVENT ESTABLISHMENT OF ADDITIONAL NON-NATIVE SPECIES AND REDUCE THE NEGATIVE BIOLOGICAL AND ECONOMIC IMPACTS OF ESTABLISHED NON-NATIVE SPECIES.

This mission is consistent with Strategic Goal 5 of the ERP Strategic Plan.

THE GOALS

The three goals on which this implementation plan is based are as follows:

- **GOAL I: PREVENTING NEW INTRODUCTIONS OF NIS INTO THE ECOSYSTEMS OF THE SAN FRANCISCO BAY-DELTA, THE SACRAMENTO/SAN JOAQUIN RIVERS AND THEIR WATERSHEDS.**
- **GOAL II: LIMITING THE SPREAD OR, WHEN POSSIBLE AND APPROPRIATE, ELIMINATING POPULATIONS OF NIS THROUGH MANAGEMENT.**
- **GOAL III: REDUCING THE HARMFUL ECOLOGICAL, ECONOMICAL, SOCIAL AND PUBLIC HEALTH IMPACTS RESULTING FROM INFESTATION OF NIS THROUGH APPROPRIATE MANAGEMENT.**

In development of the outline approach of this plan, it is recognized that prevention is the most practical, economic and environmentally safe method for dealing with new or incipient infestations. For NIS already widely established and distributed, this plan emphasizes an ecosystem approach utilizing integrated pest management methods that are flexible and environmentally sound. The long-term benefits of control or eradication must justify the short-term impacts. Supported research and information/awareness is critical toward maintaining a long-term control or containment program.

In order to achieve the goals set forth in this plan for NIS, a number of major issues must be addressed. These issues are critical to the establishment of a successful program. These issues as described in the

STRATEGIC PLAN FOR MANAGING NONNATIVE INVASIVE SPECIES, July, 2000

are:

- Leadership, Authority and Organization
- Coordination, Cooperation and Partnership
- Education and Outreach
- Funding and Resources
- Monitoring, Mapping , Assessment
- Research
- Technology and Information Transfer
- Enforcement and Compliance
- Program Evaluation

Implementation plans developed in accordance with the CALFED NIS strategic management plan should identify the who, what, when, where, and how for the proposed tasks or actions. This CALFED NIS Implementation Plan will develop objectives from each of the major issues identified above for each of the three goals of the NIS Strategic Plan. The Implementation Plan will develop and expand detailed Tasks and Activities necessary to address the major issues and achieve the three goals.

Funding for this program has been provided through CALFED to the U.S. Fish and Wildlife Service in the amount of \$1.25 million with fiscal year 1998 funds.

The Service has agreed to develop and coordinate the development of a long-term Strategic Plan, an Implementation Plan and fund projects through three possible processes with this funding:

- Directed projects
- Expansion or extension of existing projects
- Proposal solicitation process

It is anticipated that at least \$1.05 million will be available for actual on-the-ground work when the planning process is complete. The funding time period for funds already committed to this program is through fiscal year 2000. It is anticipated that this plan will continue to be supported and implemented through the continued contributions and support of the various agencies and entities responsible for rehabilitation of the San Francisco Bay-Delta, the Sacramento/San Joaquin rivers and their watersheds.

IMPLEMENTATION ISSUES

As presented, there are a number of major issues critical to achieving the goals as presented in this plan. These issues are discussed below and will be addressed as objectives of the Implementation Plan with specific Tasks and Actions.

California natural and man made water conveyance and impoundment systems are available and utilized for multiple purposes. In addition, there is a complex mosaic of federal, state and local laws and regulations which not only address intended use of these resources but will impact efforts to prevent the introduction, establishment and management of NIS.

To facilitate accomplishment of the strategic goals, this program must coordinate with jurisdictions outside the state and build its tasks upon sound science. Therefore, mechanisms will be established to ensure that all prevention, control and abatement tasks developed and implemented by this program under this plan are (1) done so in cooperation with federal agencies, local governments, interjurisdictional organizations and other entities, as appropriate (2) based upon the best scientific information available, and (3) conducted in an environmentally-sound and conscientious manner and (4) coordinated through an interagency advisory council that will monitor management efforts and assure effective coordination of this program with CALFED, Comprehensive Assessment, Monitoring and Research Program (CMARP) and other NIS programs.

LEADERSHIP, AUTHORITY AND ORGANIZATION

As the program develops, one of the components essential to actual implementation will be to identify the leadership, authority and organization that is necessary to accomplish each of our goals. In some cases, there will be existing organizations that have the leadership and authority to carry out the actions identified in the plan. It may be that other tasks and actions determined to be essential to the success of the program do not have the leadership, authority or organization in place. In these instances, we will work to identify and/or develop the appropriate component needed to carry out the work as a part of this planning process. The formation of an interagency advisory council to monitor management efforts and assure effective coordination of this

program with CALFED and other NIS programs is essential to the success of these efforts. This council will be referred to hereafter as the Nonnative Invasive Species Advisory Council (NISAC).

COORDINATION, COOPERATION AND PARTNERSHIP

In all of the work undertaken as part of this program, the value and necessity of the elements of coordination, cooperation and partnership to the success of the program can not be overstated. At all times and in all aspects of the work, priority will be given to these ideals and we will strive to incorporate them into every aspect of the plans made and actions taken.

EDUCATION AND OUTREACH

A comprehensive awareness and education program is critical for an effective NIS management program.

Except for isolated cases that have attracted substantial media attention, the general public does not understand how NIS negatively impact the environment, the economy and the utilization of the natural aquatic resources that are important to them.

Therefore, a strategic approach to NIS must include education and awareness component for all actions and tasks presented. Developing and implementing a coordinated and comprehensive information program will expand understanding by all California citizens of the impacts and risks associated with the introduction and spread of NIS.

Information about the nature, characteristics and the impacts of NIS on the environment, economy and quality of life needs to be made more available. This information should be presented concurrently with information about related issues such as threatened and native species, natural history, endangered species, water quality, habitat restoration, and ecosystem health. An important aspect of this program will be developing outreach to inform and educate public and private entities that may be affected by project actions. The need for understanding and managing NIS should be institutionalized in public and environmental education curricula. A well-coordinated effort is needed because of the costs and complexities associated with developing and delivering a comprehensive, high caliber outreach program.

A successful education and information program must utilize individuals and institutions with expertise on how to raise public awareness and influence attitudes towards NIS management. Public information specialists can be utilized to develop distribute and coordinate information state-wide. In addition, information specialists can enhance public interest and improve citizen and organizational involvement toward reducing the spread of NIS. Raising awareness can be achieved via television spots, ad campaigns and public service announcements. All of these efforts will make extensive use of existing agencies and pursue cost-effective strategies.

An increased awareness and concern of California citizens should precipitate an increase in level of commitment by elected officials toward NIS management. Many federal and state legislators have little understanding of the risks associated with NIS and this has had a negative impact on obtaining sufficient long term funding. An immediate priority should be the development of briefing packages and presentations for national, state, and local official and interest groups.

FUNDING AND RESOURCES

Reliable consistent funding in California for management of NIS is generally fragmented and in many cases inadequate or nonexistent. This is especially true in areas of exclusion, education, emergency response, research and management. Funds are generally available on a reactive basis and do not effectively deal with infestations before they become unmanageable. Except for the Hydrilla Program conducted by California Department of Food and Agriculture, or the Northern Pike Program conducted by California Department of Fish and Game, funds for NIS are provided after the problems become widespread. Generally these funds provide resources for limited control efforts and do very little to prevent further spread to uninfested areas.

Costs associated with this management plan and associated implementation plans must be identified.

Once costs are determined, sources of revenue should be investigated and pursued. Traditional sources include but are not limited to the US Fish and Wildlife Service, ANS Task Force, US Army Corps of Engineers, US Environmental Protection Agency, Natural Resource Conservation Service and the National Fish and Wildlife Foundation. For federal

agencies, allocations of discretionary funds may be necessary if dedicated funding by decision makers (Congress) can not be achieved. At the state level, one or more agencies may have to submit Budget Change Proposals to obtain long term funding in support of a statewide management program.

In addition to traditional funding sources, a working group within the NISAC, should develop a number of nontraditional funding options for NISAC consideration and recommendation. These funding options should recognize that management of NIS benefits all Californians and will actually prove cost-effective over the long term. It should not tax or levy fees in a manner that unfairly impacts one, two or three user groups. In other words, a balance between general fund revenue and user group revenue should be achieved.

Other nontraditional source of revenue and resources involve cooperative agreements and partnerships. Federal, state, local agencies and private organizations with NIS management responsibilities will be encouraged to coordinate, share or pool resources. This can include shared purchase of supplies and use of equipment, use of staff and other human resources, sharing of mapping and monitoring data and expertise and to achieve potential purchase savings for bulk purchases of chemical supplies, biological control and educational materials.

MONITORING, MAPPING AND ASSESSMENT

Ecosystems infested with NIS are not consistently identified and delineated. Complete up to date maps, displaying the distribution and severity of NIS infestation are available only in a few areas. Knowledge of which species are located where is paramount for: 1) increasing public awareness and concern, 2) obtaining support and funding for developing a strategic program, 3) accurately predicting where new infestation may occur from already infested areas and, 4) developing effective integrated management and prevention plans with specific actions to mitigate or prevent impacts caused by NIS, 5) Establishing the costs of eradication/control efforts.

As part of the CALFED program, a Comprehensive Assessment, Monitoring and Research Program (CMARP) is under development to address the needs

of CALFED's common programs and related agency programs. The CALFED NIS Program will communicate and coordinate with CMARP programs and activities.

An ecosystem inventory, mapping and monitoring system should be based on standards which allow for easy exchange of information among federal, state and local agencies as well as private organizations. Compatible systems and software will be utilized and GIS will be integrated into this process.

RESEARCH AND TECHNOLOGY TRANSFER

A strong commitment to research and information/technology transfer is critical towards achieving the goals presented in this management plan. A working group with NISAC should review research needs already developed by various entities, identify new areas of research relative to the various actions and tasks presented in the plan, prioritize areas of research and opportunities for funding and submit a report to NISAC. This should be done on at least an annual basis. This commitment also extends to the transfer of information developed to a wide audience through many venues to assure coordination and cooperation with others involved in the same type of endeavors.

ENFORCEMENT AND COMPLIANCE

In those areas where enforcement and compliance are identified as an issue, this program will develop the information base to illustrate and define the issue and possible approaches and make recommendations to appropriate agencies to enhance the adherence to regulations.

PROGRAM EVALUATION

To be effective and responsive this management program and associated implementation plans must include an evaluation component to identify progress, evaluate implementation problem/needs and make necessary corrections at anytime. The adaptive management strategy will be highlighted. The evaluation process will include:

1. Establishment of an evaluation subcommittee within NISAC responsible for reviewing performance measures, conducting the evaluation

efforts, reporting the results to NISAC and others if required, and identifying program or plan adjustments that address projected outcomes.

2. The three program goals, as previously presented, provide the focal point for evaluation. Ways to assign measurable objectives to these goals should be developed to provide meaningful evaluation.
3. The evaluation process should be inclusive, involving those with implementation responsibility, resource user groups and others affected by the program and/or plan implementation.
4. An annual report highlighting progress and achievements will be prepared and distributed. The annual report will include evaluation of the efficacy of the programs strategies and tasks and identify revisions as needed. The annual report will be readily available on the Internet and distributed to local and federal agency and legislative decision makers.
5. Work with CALFED program managers to evaluate the NIS component/impact to their program actions and how NIS may affect the overall goal of the program.
6. Work with CALFED management through CMARP to provide NIS information as it applies to management decisions.

IMPLEMENTATION OBJECTIVES AND ACTIONS

The three goals of the CALFED Nonnative Invasive Species Program are:

GOAL 1: PREVENTING NEW INTRODUCTIONS AND ESTABLISHMENT OF NIS INTO THE ECOSYSTEMS OF THE SAN FRANCISCO BAY-DELTA, THE SACRAMENTO/SAN JOAQUIN RIVERS AND THEIR WATERSHEDS.

GOAL II: LIMITING THE SPREAD OR, WHEN POSSIBLE AND APPROPRIATE, ELIMINATING POPULATIONS OF NIS THROUGH MANAGEMENT ACTIONS.

GOAL III: REDUCING THE HARMFUL ECOLOGICAL, ECONOMICAL, SOCIAL AND PUBLIC HEALTH IMPACTS RESULTING FROM INFESTATION OF NIS THROUGH APPROPRIATE MITIGATION.

The Objectives that follow are identified beginning on page 8 of this document and within the draft NIS Strategic Plan as Major Issues of concern for the NIS Program. Under each Objective, specific Actions and Tasks have been identified which are considered essential elements of the implementation of this program.

OBJECTIVE 1: LEADERSHIP, AUTHORITY AND ORGANIZATION:

DEVELOP AND IDENTIFY THE LEADERSHIP, AUTHORITY AND ORGANIZATION NECESSARY TO PREDICT, PREVENT AND REDUCE THE IMPACTS OF NIS INTRODUCTIONS IN THE ECOSYSTEMS OF THE SAN FRANCISCO BAY-DELTA, THE SACRAMENTO/SAN JOAQUIN RIVERS AND THEIR WATERSHEDS.

ACTION 1A: Form an Interagency Nonnative Invasive Species Advisory Council (NISAC) to develop the leadership, authority and organization necessary to effectively promote the NIS goals.

1. NISAC will coordinate and streamline the authorities to regulate NIS between state and federal agencies. Specific problems will be identified and pathways evaluated.

2. NISAC will develop and analyze information and recommendations to go to CALFED and program elements specific to areas of CALFED concern.

- A. NIS Technical Review Team assist with preparation of requests for proposals and coordinate peer review of proposal solicitation responses and evaluate the potential of the action in encouraging the establishment of NIS.

- B. Provide information for CALFED management decisions on the prevention NIS introductions.

- C. Develop interface with CMARP for information exchange and coordination aimed at the prevention of the introduction of NIS.

3. Develop Rapid Response Plan to address early infestations of NIS.
4. Develop and implement standard reporting procedures for NIS.
5. NISAC will develop the resources necessary to carry on the council activities beyond FY 2000.

ACTION 1B: Identify existing authorities, leadership and areas which could benefit from further support and leadership and link this information to CALFED actions and management decisions. In particular, identify those with the authority to prevent the introduction of species through:

- Ballast Water releases
- Bait use (marine and freshwater).
- Deliberate introductions
- Aquaculture releases
- Aquarium and pet trades
- Water features industry
- Landscape and nursery industry
- Urban forestry
- Urban entomology
- Road/Highway construction/repair/mitigation
- Animal feeds
- Off-road vehicles
- Boating practices

1. Identify existing species specific workgroups and authorities of NIS not yet present in the CALFED area and work with those groups to determine if that species presents a threat to reaching CALFED areas of concern. Work with those groups to determine measures which can prevent the introduction of the species into the CALFED study area.

ACTION 1C: Identify gaps in existing authorities that would affect CALFED interests and coordinate with appropriate bodies to meet CALFED needs.

ACTION 1D: Develop and implement a program to systematically apply available resources to the support of viable regulations and authorities to prevent introductions of NIS.

1. Support improvements to exclusionary activities (ballast management, clean lists and border station programs).
2. Support efforts to designate ballast water as a pollutant to be regulated under existing state law (regarding the release of point source pollution and the uptake of ballast in infested waters.)
3. Recommend and provide protocols for improved detention and quarantine procedures (Cargo, packing materials, dredge spoils).
4. Review and make recommendations to improve routine inspections programs and processes of entities that may transfer NIS such as:
 - Retail outlets
 - Commodity transfers
 - Commercial activities
 - Public Venues
 - Irrigation districts

ACTION 1E: Utilize a technical working group within NISAC to review and recommend statutory and regulatory changes for state legislation to limit spread, prioritize control strategies and evaluate approaches that may limit spread of NIS.

ACTION 1F: Identify the organization(s) with the expertise and experience necessary to implement control strategies for NIS.

ACTION 1G: Develop a process through NISAC to review, recommend and coordinate control and management plans.

ACTION 1H: Provide a forum for CMARP, CALFED program managers, and stakeholders to discuss CALFED actions and the possibility of these actions encouraging the establishment or spread of NIS. Facilitated discussions of project or action modification to avoid encouraging NIS establishment will be part of the forum. Relate the impacts of NIS on CALFED actions and facilitate discussions of methods of reducing or eliminating the NIS impacts.

ACTION 1I: Establish interjurisdictional approaches to facilitate legislative, regulatory and other actions to prevent NIS introductions.

1. Pacific States Fisheries Legislative Task Force
2. Pacific States Marine Fisheries Commission

OBJECTIVE 2: COORDINATION, COOPERATION AND PARTNERSHIP.

ESTABLISH AND SUPPORT COALITIONS AND INTERJURISDICTIONAL APPROACHES TO FACILITATE PARTNERSHIP, COORDINATION AND COOPERATION IN THE EFFORTS TO PREVENT NIS INTRODUCTIONS, CONTROL NIS POPULATIONS AND REDUCE THEIR NEGATIVE IMPACTS.

ACTION 2A: NISAC will monitor NIS management efforts and assure effective coordination between CALFED and other NIS programs.

ACTION 2B: Develop partnerships with regional and national programs to facilitate the recognition of NIS threatening to spread to CALFED solution area such as:

1. Western Regional Panel
2. Aquatic Nuisance Species Task Force
3. National and California Sea Grant
4. Pacific States Marine Fisheries Commission
5. Invasive Species Council
6. Water agencies, including NAQA, etc.
7. California Interagency Noxious Weed Coordinating Committee
8. California Exotic Pest Plant Council
9. Grassroots organizations
10. Irrigation districts
11. University of California Cooperative Extension
12. Pacific Ballast Water Group
13. Weed Management Areas

ACTION 2C: Initiate and maintain a communication network of NIS scientists and resource managers via NISAC and the work teams to encourage information exchange and coordination of effort.

ACTION 2D: Establish and support interjurisdictional process to ensure compatibility and consistency between western states and between states, public, private and semi-public agencies and federal agencies. (Federal consistency, a tool implemented by coastal

management programs to ensure that federal activities/projects are compatible with enforceable policies of the state, is recommended to facilitate interjurisdictional endeavors.)

ACTION 2E: Establish and support coalitions among the western states including agricultural, natural resource agencies, state universities, the Coastal State Organization, coastal managers, tribal groups, recreational boaters, nurserymen, pet industry, angler groups and other concerned resource users. Assist coalitions in promoting state and federal legislation and programmatic support for the prevention of new NIS introductions or the spread of existing populations that could impact CALFED objectives.

ACTION 2F: Implement a watershed approach as a basic organizational structure limiting the spread of NIS but with the understanding that current water transport facilities and modes of transportation transcends traditional watershed patterns of distribution.

1. Establish cooperative policies with counties (and other entities) sharing watersheds and water transport facilities to limit the spread of NIS.
2. Establish a network of coastal counties and regional interests sharing coastal access to limit the spread of NIS.

ACTION 2G: Establish and maintain cooperative relationships with groups working to limit spread of NIS and work to coordinate and complement those efforts.

1. Team Arundo
2. Spartina Technical Control Committee
3. Department of Food and Ag (Hydrilla program and others)
4. Boating and Waterways (Egeria, Hyacinth and others)
5. ANS Task Force European Green Crab Workgroup
6. IEP Chinese mitten crab Project Work Team
7. Pacific Ballast Water Group

ACTION 2H: Support and enhance the operations and projects of the organizations responsible for ongoing programs to prevent, mitigate, control, or eradicate NIS populations.

OBJECTIVE 3: EDUCATION AND OUTREACH:

DEVELOP AND IMPLEMENT A COORDINATED AND COMPREHENSIVE INFORMATION AND EDUCATION PROGRAM TO EXPAND THE UNDERSTANDING OF THE BENEFITS OF PREVENTION, THE RISKS AND IMPACTS ASSOCIATED WITH INTRODUCTION AND SPREAD OF NIS, CONTROL STRATEGIES, ASSOCIATED ENVIRONMENTAL IMPACTS AND THE POSSIBLE MODIFICATION OF HUMAN BEHAVIOR AND ACTIVITIES THAT MAY REDUCE HARMFUL IMPACTS.

ACTION 3A: Provide the most up to date information in a format useful in CALFED management and program decisions:

1. Develop for CALFED managerial use, fact sheets on life history, environmental, economic impacts and preventative measures, etc for species that threaten to establish in the CALFED area of concern. The information on this sheet is more specific than those for general public distribution.
2. Provide a quarterly newsletter on potential NIS introductions, range distribution changes, unexpected beneficial and detrimental impacts of NIS, etc. The target audience will be CALFED managers and those making policy decisions for the CALFED program.

ACTION 3B: Acquire or develop and distribute appropriate information to educate and inform appropriate resource user groups about NIS and their harmful impacts in cooperation with existing resources.

1. Develop a CALFED NIS web page to educate the resource users and the public about introductions.
2. Create NIS exhibits and supply materials to public facilities interpretive displays such as state parks, boat launches, the DWR State Water Project visitors centers, and public libraries.

3. Include information in boater registration mailer.
4. Utilize existing environmental and resource newsletters and other educational materials to publish and publicize appropriate NIS information.

ACTION 3C: Acquire or develop and distribute appropriate information to educate and inform appropriate businesses and other entities that may contribute to the introduction, establishment and spread of NIS.

1. Work with business and industry involved in the development of new technologies to reduce the transfer and movement of NIS.
2. Identify methods to prevent inadvertent "hitchhiking" of NIS during transport of commercial products.
3. Promote the use and inspection of packaging materials to reduce transport of NIS.
4. Acquire or develop and distribute Best Management Practices and regulation and compliance information to reduce the risk of activities which contribute to the introduction, establishment or spread of NIS. Such businesses and entities include:
 - Fishing (sport and commercial)
 - Live Seafood Dealers/ Sellers
 - Pet Stores
 - Nursery industry
 - Bait Dealers/Sellers
 - Aquatic Plant Distributors
 - Aquascape/Landscape Designers
 - Public venues (aquariums, zoos, botanical gardens)
 - Aquaculture operations.
5. Distribute information on regulations and enforcement that may apply to activities that contribute to introduction of NIS.
 - Immigration
 - Customs
 - Military

ACTION 3D: Acquire from partners or develop and distribute appropriate information to educate and inform the public about NIS and their harmful impacts.

1. Participate in and support the 100th Meridian Initiative to prevent the westward spread of zebra mussels.
2. Promote and utilize existing public education materials such as the zebra mussel traveling trunk.
3. Support development of materials specifically designed to educate the public about the hazards of intentional/accidental introduction in cooperation with other outreach efforts and organizations like UC Cooperative Extension.
 - Aquaria/Pet stores
 - Aquatic plant/nursery
 - Fishermen
 - Boaters.
4. Support development of a K-12 curricula in conjunction with the State Department of Education in cooperation with other interested parties such as county advisors of UC Cooperative Extension, Sea Grant.
5. Support the development and distribution of appropriate information to educate and inform the public about public health risks identified by public health agencies as associated with NIS.

ACTION 3E: In cooperation with other groups, develop identification materials to facilitate participation by the public and others in recognizing and reporting spread of NIS.

ACTION 3F: Inform and educate user groups and the public about the management strategies that are necessary to limit spread of NIS.

ACTION 3G: Coordinate community volunteer groups, fishermen, sport divers. Shell collectors, school groups and others in and around the Bay-Delta habitats to act as an early warning system and to communicate "sightings" of NIS to NISAC.

ACTION 3H: Develop and distribute appropriate information to educate and inform the public and appropriate resource users groups about control strategies, associated environmental impacts and the rationale for implementing such programs.